## Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

## Listing of Claims

1. (original) A particulate matter sensor comprising:

a mount;

an insulator situated in the mount;

an electrode situated in the insulator;

a terminal situated in the insulator and connected to the electrode; and

wherein the electrode is coated with an insulating film.

2. (original) The sensor of claim 1, wherein the electrode comprises a stainless steel.

3. (original) The sensor of claim 2, wherein the insulating film is a pacivating layer.

4. (original) The sensor of claim 3, further comprising an amplifier having an input connected to the terminal and an output that may indicate a particulate concentration in a

stream of gas passing at the electrode.

5. (original) The sensor of claim 3, wherein the pacivation layer comprises a material selected from a group consisting of oxidized steel, cerium oxide, and a ceramic.

6. (original) The sensor of claim 3, wherein the electrode is situated in a portion of an exhaust system of a combustion device.

7. (original) The sensor of claim 3, wherein the electrode comprises 304 stainless steel.

8. (original) A particulate matter detector comprising:

a spark plug having a center electrode;

a rod attached to the center electrode; and

a pacivation layer formed on the metal rod.

9. (original) The detector of claim 8, wherein the rod is a metal rod.

10. (original) The detector of claim 9, wherein the metal

rod is a steel rod.

11. (original) The detector of claim 10, wherein the pacivation layer is oxidized steel.

12. (original) The detector of claim 11, wherein the steel is stainless steel.

13. (original) The detector of claim 9, wherein the pacivation layer comprises a material selected from a group consisting of oxidized steel, cerium oxide, and a ceramic.

14. (original) The detector of claim 12, wherein the steel is 304 stainless steel.

15. (original) The detector of claim 12 wherein:

the metal rod has a length between 0.25 inch and 12 inches; and

the metal rod has a thickness between 1/32 inch and 3/8 inch.

16. (original) The detector of claim 9, wherein:

the spark plug has a terminal connected to the metal rod; and

the terminal is connected to an amplifier having an output that may indicate a particulate concentration in a vicinity of metal rod.

17. (original) The detector of claim 16, wherein the metal rod is situated in a portion of a combustion mechanism.

18. (original) A method of making a particulate detector, comprising:

obtaining a spark plug having a center electrode;

attaching a metal rod to the center electrode; and

forming a pacivating film on the metal rod.

19. (original) The method of claim 18, wherein:

the metal rod comprises stainless steel; and

the pacivating film is oxidized stainless steel.

20. (original) The method of claim 19, wherein the metal rod comprises 304 stainless steel.

21. (original) Means for detecting particulate matter, comprising:

means for holding a conductive rod;

means for paciviating formed on the conductive rod; and

means for electrically connecting to the conductive rod.

22. (original) The means of claim 21, further comprising a means for mounting the means for detecting particulate matter in a portion of an exhaust system of a combustion mechanism.

23. (original) The means of claim 22, wherein the combustion mechanism is a diesel engine.

24. (original) A method of making a sensor, comprising:

forming an elongated piece of metal placing the elongated piece of metal in an insulator;

forming a terminal connected to the elongated piece of metal;

forming a thin film of insulation on the elongated piece of metal.

25. (original) The method of claim 24, wherein:

the elongated piece of metal is stainless steel; and

the film of insulation is formed by oxidizing the stainless steel.

26. (original) The method of claim 24, wherein the stainless steel is 304 stainless steel.

27. (original) A detector comprising:

a metal base;

an insulator situated in the metal base;

an elongated piece of metal situated in the insulator; and

an insulative film formed on the elongated piece of metal.

28. (original) The detector of claim 27, wherein:

the elongated piece of metal comprises stainless steel; and

the insulative film is a forming of a pacivating film from the stainless steel.

29. (original) The detector of claim 28, wherein the

elongated piece of metal comprises 304 stainless steel.

30. (original) The detector of claim 29, wherein:

the elongated piece of metal is connected to an amplifier; and

the amplifier has an output that may indicate a concentration of particulate matter in a vicinity of the elongated piece of metal.

31. (original) The detector of claim 30, wherein the elongated piece of metal is situated in an exhaust system of an engine.

32. (original) The detector of claim 31, further comprising:

processor comprising the amplifier; and

a plurality of sensors connected to the engine and the processor; and

wherein the processor provides control signals to the engine for affecting an amount of particulate matter in the exhaust system.

33. (original) The detector of claim 32, wherein the control signals may affect fuel injection timing and percent of exhaust gas recirculation of the engine.

34. (original) A detector comprising:

a particulate matter sensor situated in an exhaust system of an engine;

a processor connected to the particulate matter sensor;

a plurality of engine parameter sensors connected to the processor and the engine;

wherein the processor provides control signals to the engine for affecting an amount of particulate matter in the exhaust system.

35. (original) The detector of claim 34, wherein the control signals affect fuel injection timing of the engine.

36. (original) The detector of claim 34, wherein the control signals affect a percent of exhaust gas recirculation of the engine.

37. (original) The detector of claim 34, wherein the control signals affect valve control in the engine.